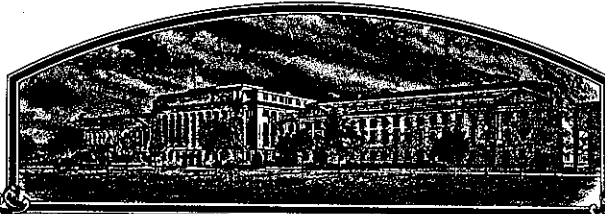


No.

8200039



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Northrup King Co.

Whereas, THERE HAS BEEN PRESENTED TO THE  
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BARLEY

'425'



Attest:

*Kenneth H. ...*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 22nd day of February in the year of our Lord one thousand nine hundred and eighty-five.

*John R. ...*

Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

FORM APPROVED  
OMB NO. 40-R3822

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY <b>2505</b>		1b. VARIETY NAME <b>'425'</b>		FOR OFFICIAL USE ONLY PV NUMBER <b>8200039</b>	
2. KIND NAME <b>Barley</b>		3. GENUS AND SPECIES NAME <b><u>Hordeum vulgare</u> L.</b>		FILING DATE <b>12/16/81</b>	TIME <b>2:00</b> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">P.M.</span>
4. FAMILY NAME (BOTANICAL) <b>Gramineae</b>		5. DATE OF DETERMINATION <b>July, 1978</b>		FEE RECEIVED \$ <b>500.00</b> \$ <b>250.00</b>	DATE <b>12/16/81</b> <b>2/11/85</b>
6. NAME OF APPLICANT(S) <b>Northrup King Co.</b>		7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) <b>P. O. Box 959 Minneapolis, MN 55440</b>		8. TELEPHONE AREA CODE AND NUMBER <b>(612) 781-5305</b>	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) <b>Corporation</b>			10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION <b>Delaware</b>		11. DATE OF INCORPORATION <b>1896</b>
12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS: <b>Robert W. Romig Northrup King Co. P. O. Box 959, Minneapolis, MN 55440</b>					

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- ☒ 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
- ☒ 13B. Exhibit B, Novelty Statement.
- ☒ 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)
- ☐ 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a). (If "Yes," answer 14B and 14C below.) ☐ YES ☒ NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?  
☐ YES ☐ NO

14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED?  
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? ☐ YES ☒ NO (If "Yes," give name of countries and dates.)

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? ☐ YES ☒ NO (If "Yes," give name of countries and dates.)

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? ☒ YES ☐ NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

DECEMBER 14 1981  
(DATE)

Robert W. Romig  
(SIGNATURE OF APPLICANT)

## INSTRUCTIONS

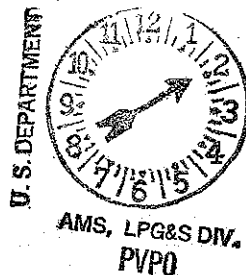
**GENERAL:** Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (\$250 filing fee and \$250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

### ITEM

- 5 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.
- 13a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.
- 13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 13c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as, plant habit, plant color, disease resistance, etc.
- 14a If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)
- 15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.

RECEIVED

DEC 16 1981



**EXHIBIT A**  
**Origin and Breeding History of Barley Variety '425'**

Barley variety '425' is the product of hybridization and subsequent plant selection from the cross ST/FLDP//CM67/3/Briggs. It has the pedigree 73W883-B-4W-1S-ØW. ST denotes a short-strawed genetic male sterile plant selection made from CCXXI used as the female parent in the first cross. FLDP denotes an unpedigreed short, stiff-strawed Japanese Uzu dwarf barley used as the male parent in the first cross. CM67 and Briggs are both barley varieties released by the California Agricultural Experiment Station.

The first cross was made in the greenhouse at Woodland, California in the spring of 1968. We then grew the  $F_1$  as a bulk at Salinas, California that summer. This was followed by individual plant selection in the  $F_2$  at Woodland in the 1968-1969 season; in the  $F_3$  at Salinas in the summer of 1969; and in the  $F_4$  at Woodland in 1970.

An individual  $F_4$  plant selection made at Woodland in 1970 was chosen as the female parent to initiate the second cross using CM67 as the male parent. This cross was made in the spring of 1970 in the field at Woodland. The bulk  $F_1$  was advanced to Salinas that summer. This was followed by individual plant selection in the  $F_2$  at Woodland in the 1970-1971 season; in the  $F_3$  at Salinas that summer; and in the  $F_4$  at Woodland in 1972.

An individual  $F_4$  plant selection made at Woodland in 1972 was used as the female parent to make the third and final cross using Briggs as the male parent. This cross was made in the field in the spring of 1972. The resultant  $F_1$  was grown that summer at Salinas. This was followed by individual plant selection in the  $F_2$  at Woodland in the 1972-1973 season and in the  $F_3$  at Salinas in the summer. The  $F_4$  was grown in the 1973-1974 season at Woodland and was subsequently bulk harvested for a preliminary yield trial test during the 1974-1975 season. This population was maintained as a pure line for one generation, at which time we pulled 15 heads ( $F_6$  seed) for the development of Breeder seed.

The 15 heads were grown in head rows at Woodland in 1976. We harvested each row separately for plots which were grown at Salinas in the summer of the same year. During the 1976-1977 season, each of the 15 plots were further increased at Woodland. On the basis of uniformity of type, genetic purity, and previously collected yield data, we selected and bulked 5 head-row lines to represent the variety. ~~Summer~~ '425, therefore, is a bulk of 5,  $F_6$  head row derived lines.

We expect to maintain Breeder seed by bulking pure line increases from each of the 5 lines.

No ~~characteristic or unusual~~ variants have been noted during multiplication of variety '425' in the Woodland, California environment. Our experience during reproduction of variety '425' shows it to be a stable and uniform variety.

8200039

**EXHIBIT B**  
**Novelty Statement**

Variety '425' is most similar to Kombar but differs from Kombar in the following:

<u>Trait</u>	<u>'425'</u>	<u>Kombar</u>
Awns	Equal to length of glumes	More than equal to length of glumes
Lemma		
Awn surface	Rough	Semi-smooth
Teeth	Few	Numerous
Collar	V-shaped	Closed
Plant height	92 cm	94 cm



## 8. LEMMA:

☐ 5 Awn: 1 = AWNLESS 2 = AWNLETS ON CENTRAL ROWS AWNLESS ON LATERAL ROWS  
 3 = SHORT ON CENTRAL ROWS, AWNLETS ON LATERAL ROWS 4 = SHORT (less than equal to length of spike)  
 5 = LONG (longer than spike) 6 = HOODED

☐ 4 Awn Surface:  $\frac{1}{0}$  = AWNLESS  $\frac{2}{1}$  = SMOOTH  $\frac{3}{2}$  = SEMISMOOTH  $\frac{4}{3}$  = ROUGH

☐ 3 Teeth: 1 = ABSENT 2 = FEW 3 = NUMEROUS ☐ 1 Hair: 1 = ABSENT 2 = PRESENT

☐ 1 Shape of base: 1 = DEPRESSION 2 = SLIGHT CREASE 3 = TRANSVERSE CREASE ☐ 2 Rachilla Hairs: 1 = SHORT 2 = LONG

## 9. STIGMA:

☐ 2 Hairs: 1 = FEW 2 = MANY

## 10. SEED:

☐ 2 Type: 1 = NAKED 2 = COVERED ☐ 1 Hairs on Ventral Furrow: 1 = ABSENT 2 = PRESENT

☐ 5 Length: 1 = SHORT (8.0 mm.) 2 = SHORT TO MIDLONG (7.5 - 9.0 mm.) 3 = MIDLONG (8.5 - 9.5 mm.)  
 4 = MIDLONG TO LONG (9.0 - 10.5 mm.) 5 = LONG (10.0 mm.)

☐ 3 Wrinkling of hull: 1 = NAKED 2 = SLIGHTLY WRINKLED 3 = SEMIWRINKLED 4 = WRINKLED

☐ 1 Aleurone Color: 1 = COLORLESS (White or Yellow) 2 = BLUE

☐ ☐ PERCENT ABORTIVE ☐ 5 ☐ 4 GMS. PER 1000 SEEDS

## 11. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> 0 SEPTORIA	<input type="checkbox"/> 1 NET BLOTCH	<input type="checkbox"/> 0 SPOT BLOTCH	<input type="checkbox"/> 1 POWDERY MILDEW
<input type="checkbox"/> 0 LOOSE SMUT	<input type="checkbox"/> 0 BACTERIAL BLIGHT	<input type="checkbox"/> 0 COVERED SMUT	<input type="checkbox"/> 0 FALSE LOOSE SMUT
<input type="checkbox"/> 0 STEM RUST	<input type="checkbox"/> 1 LEAF RUST	<input type="checkbox"/> 0 SCAB	<input type="checkbox"/> 1 SCALD 2
<input type="checkbox"/> 0 AY	<input type="checkbox"/> 0 BSMV	<input type="checkbox"/> 1 BYDV	<input type="checkbox"/> OTHER (Specify)

## 12. INSECT: (0 = Not tested, 1 = Susceptible 2 = Resistant)

<input type="checkbox"/> 0 GREEN BUG	<input type="checkbox"/> 0 ENGLISH GRAIN APHID	<input type="checkbox"/> 0 CHINCH BUG	<input type="checkbox"/> ARMYWORM
<input type="checkbox"/> 0 GRASS HOPPERS	<input type="checkbox"/> 0 CERIAL LEAF BETTLE	<input type="checkbox"/> 0 OTHER (Specify)	
HESSIAN FLY RACES		<input type="checkbox"/> 0 GP	<input type="checkbox"/> 0 A
		<input type="checkbox"/> 0 B	<input type="checkbox"/> 0 C
		<input type="checkbox"/> 0 D	<input type="checkbox"/> 0 E
		<input type="checkbox"/> 0 F	<input type="checkbox"/> 0 G

## 13. CHEMICAL (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 DDT ☐ OTHER (Specify)

## 14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Briggs	Seed size	Kombyne
Leaf size	Kombar	Coleoptile elongation	
Leaf color	Kombar	Seedling pigmentation	Briggs
Leaf carriage	Kombar		

REFERENCES: The following publications may be used as a reference aid for the standardization of character descriptions and terms used in this form:

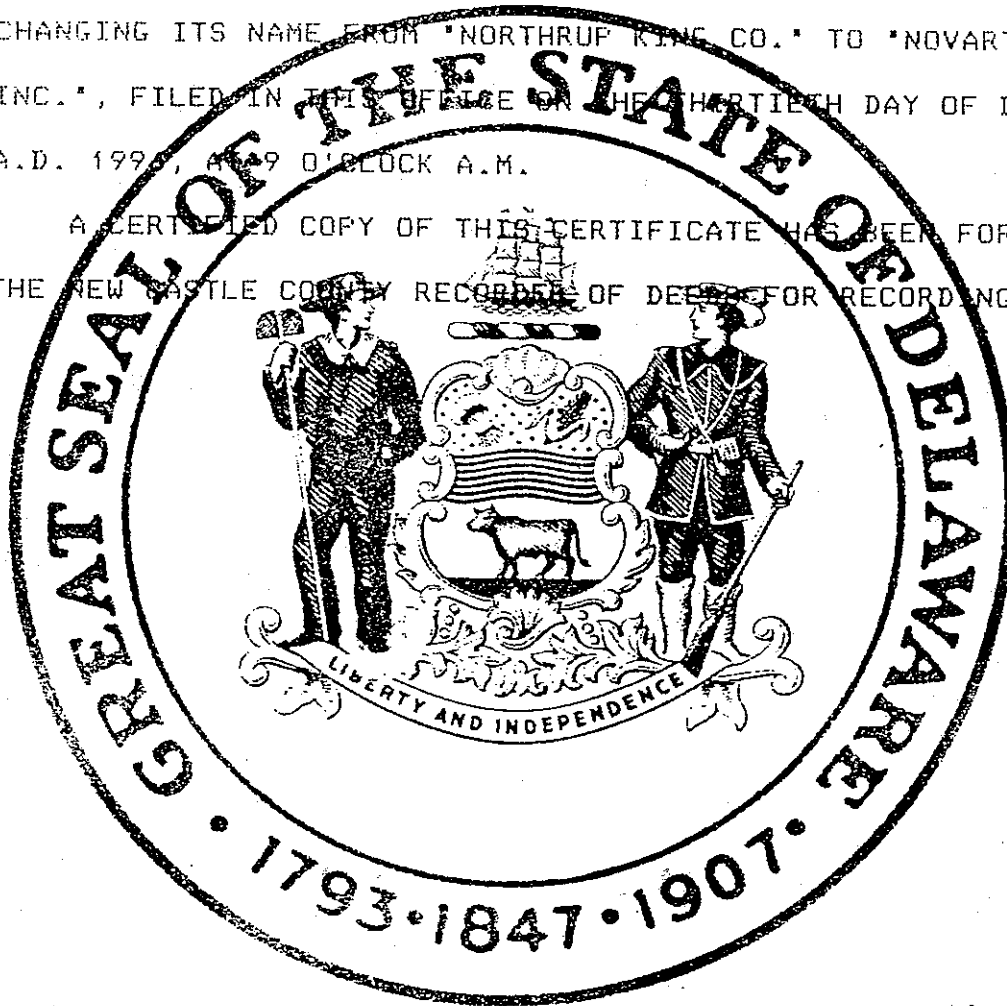
1. Wiebe, G. A., and D. A. Reid, 1961, Classification of Barley Varieties Grown in the United States and Canada in 1958, Technical Bulletin No. 1224, U.S. Dept. of Agriculture.
2. Reid, D. A., and G. A. Wiebe, 1968, Barley: Origin, Botany, Culture, Winter Hardiness, Genetics, Utilization, Pests, Agriculture Handbook No. 338, U.S. Dept. of Agriculture. pp. 61 - 84.
3. Malting Barley Improvement Association, Milwaukee, Wisconsin, 1971, Barley Variety Dictionary.

COLOR: Nickerson's or any recognized color fan may be used to determine color of the described variety.

# Office of the Secretary of State

I, EDWARD J. FREEL, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "NORTHROP KING CO.", CHANGING ITS NAME FROM "NORTHROP KING CO." TO "NOVARTIS SEEDS, INC.", FILED IN THIS OFFICE ON THE THIRTIETH DAY OF DECEMBER, A.D. 1996, AT 9 O'CLOCK A.M.

A CERTIFIED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS FOR RECORDING.



*Edward J. Freel*

Edward J. Freel, Secretary of State

0829320 8100

960389892

AUTHENTICATION:

8267947

DATE:

12-31-96



CERTIFICATE OF AMENDMENT OF CERTIFICATE OF INCORPORATION  
OF  
NORTHROP KING CO.

It is certified that:

1. The name of the corporation (hereinafter called the "Corporation") is Northrup King Co.

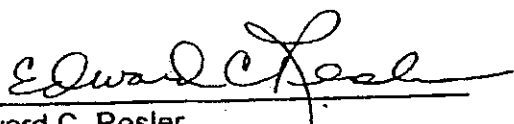
2. The Certificate of Incorporation of the Corporation is hereby amended by striking out Section 1 thereof and by substituting in lieu of said Section the following new Section.

1. The name of the Corporation is Novartis Seeds, Inc.

3. The amendment of the certificate of incorporation herein certified has been duly adopted and written consent has been given in accordance with the provisions of Sections 228 and 242 of the General Corporation Law of the State of Delaware.

4. The effective date of the amendment herein certified shall be January 1, 1997.

Signed on December 27, 1996.

  
Edward C. Resler  
Vice President & Secretary